SEQUENCE LISTING

<110> Cytos Biotechnology AG
      Bachmann, Martin F
      Gatto, Dominiqe

<120> SELECTION OF B CELLS WITH SPECIFICITY OF INTEREST: METHOD OF PREPARATION AND USE

<130> C62780PC

<150> US 60/470,443
<151> 2003-05-15

<160> 85

<170> PatentIn version 3.2

<210> 1
<211> 132
<212> PRT
<213> Bacteriophage Q beta

<400> 1

Ala Lys Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Lys Asp Gly Lys
1               5                   10                  15

Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
            20                  25                  30

Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
        35                  40                  45

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
    50                  55                  60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65                  70                  75                  80

Asp Pro Ser Val Thr Arg Gln Ala Tyr Ala Asp Val Thr Phe Ser Phe
                85                  90                  95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
            100                 105                 110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
        115                 120                 125

Asn Pro Ala Tyr
        130

<210> 2
<211> 329
<212> PRT
<213> Bacteriophage Q beta

<400> 2

Met Ala Lys Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Lys Asp Gly
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Lys Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly
            20                  25                  30

2

Val Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg
     35            40             45

Val Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys
   50            55           60

Val Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser
65           70           75          80

Cys Asp Pro Ser Val Thr Arg Gln Ala Tyr Ala Asp Val Thr Phe Ser
         85          90          95

Phe Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu
        100        105        110

Leu Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln
     115         120        125

Leu Asn Pro Ala Tyr Trp Thr Leu Leu Ile Ala Gly Gly Gly Ser Gly
   130        135        140

Ser Lys Pro Asp Pro Val Ile Pro Asp Pro Pro Ile Asp Pro Pro Pro
145          150        155        160

Gly Thr Gly Lys Tyr Thr Cys Pro Phe Ala Ile Trp Ser Leu Glu Glu
        165        170        175

Val Tyr Glu Pro Pro Thr Lys Asn Arg Pro Trp Pro Ile Tyr Asn Ala
        180        185        190

Val Glu Leu Gln Pro Arg Glu Phe Asp Val Ala Leu Lys Asp Leu Leu
      195        200        205

Gly Asn Thr Lys Trp Arg Asp Trp Asp Ser Arg Leu Ser Tyr Thr Thr
   210        215        220

Phe Arg Gly Cys Arg Gly Asn Gly Tyr Ile Asp Leu Asp Ala Thr Tyr
225          230        235        240

Leu Ala Thr Asp Gln Ala Met Arg Asp Gln Lys Tyr Asp Ile Arg Glu
        245        250        255

Gly Lys Lys Pro Gly Ala Phe Gly Asn Ile Glu Arg Phe Ile Tyr Leu
        260        265        270

Lys Ser Ile Asn Ala Tyr Cys Ser Leu Ser Asp Ile Ala Ala Tyr His
      275        280        285

Ala Asp Gly Val Ile Val Gly Phe Trp Arg Asp Pro Ser Ser Gly Gly
    290        295        300

Ala Ile Pro Phe Asp Phe Thr Lys Phe Asp Lys Thr Lys Cys Pro Ile
305          310        315        320

Gln Ala Val Ile Val Val Pro Arg Ala
    325

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<210>  3
<211>  130
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<213>  Bacteriophage fr

<400>  3

Met Ala Ser Asn Phe Glu Glu Phe Val Leu Val Asp Asn Gly Gly Thr
1               5                   10                  15

Gly Asp Val Lys Val Ala Pro Ser Asn Phe Ala Asn Gly Val Ala Glu
            20                  25                  30

Trp Ile Ser Ser Asn Ser Arg Ser Gln Ala Tyr Lys Val Thr Cys Ser
        35                  40                  45

Val Arg Gln Ser Ser Ala Asn Asn Arg Lys Tyr Thr Val Lys Val Glu
    50                  55                  60

Val Pro Lys Val Ala Thr Gln Val Gln Gly Gly Val Glu Leu Pro Val
65                  70                  75                  80

Ala Ala Trp Arg Ser Tyr Met Asn Met Glu Leu Thr Ile Pro Val Phe
                85                  90                  95

Ala Thr Asn Asp Asp Cys Ala Leu Ile Val Lys Ala Leu Gln Gly Thr
            100                 105                 110

Phe Lys Thr Gly Asn Pro Ile Ala Thr Ala Ile Ala Ala Asn Ser Gly
        115                 120                 125

Ile Tyr
    130


<210>  4
<211>  130
<212>  PRT
<213>  Bacteriophage GA

<400>  4

Met Ala Thr Leu Arg Ser Phe Val Leu Val Asp Asn Gly Gly Thr Gly
1               5                   10                  15

Asn Val Thr Val Val Pro Val Ser Asn Ala Asn Gly Val Ala Glu Trp
            20                  25                  30

Leu Ser Asn Asn Ser Arg Ser Gln Ala Tyr Arg Val Thr Ala Ser Tyr
        35                  40                  45

Arg Ala Ser Gly Ala Asp Lys Arg Lys Tyr Ala Ile Lys Leu Glu Val
    50                  55                  60

Pro Lys Ile Val Thr Gln Val Val Asn Gly Val Glu Leu Pro Gly Ser
65                  70                  75                  80

Ala Trp Lys Ala Tyr Ala Ser Ile Asp Leu Thr Ile Pro Ile Phe Ala
                85                  90                  95

Ala Thr Asp Asp Val Thr Val Ile Ser Lys Ser Leu Ala Gly Leu Phe
            100                 105                 110
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Lys Val Gly Asn Pro Ile Ala Glu Ala Ile Ser Ser Gln Ser Gly Phe
        115                 120                 125


Tyr Ala
    130


<210>  5
<211>  128
<212>  PRT
<213>  Bacteriophage PP7

<400>  5

Met Ser Lys Thr Ile Val Leu Ser Val Gly Glu Ala Thr Arg Thr Leu
1               5               10                  15


Thr Glu Ile Gln Ser Thr Ala Asp Arg Gln Ile Phe Glu Glu Lys Val
            20                  25                  30


Gly Pro Leu Val Gly Arg Leu Arg Leu Thr Ala Ser Leu Arg Gln Asn
        35                  40                  45


Gly Ala Lys Thr Ala Tyr Arg Val Asn Leu Lys Leu Asp Gln Ala Asp
    50                  55                  60


Val Val Asp Cys Ser Thr Ser Val Cys Gly Glu Leu Pro Lys Val Arg
65                  70                  75                  80


Tyr Thr Gln Val Trp Ser His Asp Val Thr Ile Val Ala Asn Ser Thr
                85                  90                  95


Glu Ala Ser Arg Lys Ser Leu Tyr Asp Leu Thr Lys Ser Leu Val Ala
            100                 105                 110


Thr Ser Gln Val Glu Asp Leu Val Val Asn Leu Val Pro Leu Gly Arg
        115                 120                 125


<210>  6
<211>  132
<212>  PRT
<213>  Bacteriophage Q-beta

<400>  6

Ala Lys Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Arg Asp Gly Lys
1               5               10                  15


Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
            20                  25                  30


Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
        35                  40                  45


Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
    50                  55                  60


Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65                  70                  75                  80

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                                          5
Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
                85                  90                  95


Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
            100                 105                 110


Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
        115                 120                 125


Asn Pro Ala Tyr
        130


<210>  7
<211>  132
<212>  PRT
<213>  Bacteriophage Q-beta

<400>  7

Ala Lys Leu Glu Thr Val Thr Leu Gly Lys Ile Gly Lys Asp Gly Lys
1               5                   10                  15


Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
            20                  25                  30


Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
        35                  40                  45


Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
    50                  55                  60


Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65                  70                  75                  80


Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
                85                  90                  95


Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
            100                 105                 110


Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
        115                 120                 125


Asn Pro Ala Tyr
        130


<210>  8
<211>  132
<212>  PRT
<213>  Bacteriophage Q-beta

<400>  8

Ala Arg Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Arg Asp Gly Lys
1               5                   10                  15


Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
            20                  25                  30


Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
        35                  40                  45
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6

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
    50              55              60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65              70              75              80

Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
            85              90              95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
            100             105             110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
        115             120             125

Asn Pro Ala Tyr
    130


<210>    9
<211>    132
<212>    PRT
<213>    Bacteriophage Q-beta

<400>    9

Ala Lys Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Lys Asp Gly Arg
1               5               10              15

Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
            20              25              30

Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
        35              40              45

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
    50              55              60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65              70              75              80

Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
            85              90              95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
            100             105             110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
        115             120             125

Asn Pro Ala Tyr
    130


<210>    10
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<212>    PRT
<213>    Bacteriophage Q-beta

<400>    10

7

Ala Arg Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Lys Asp Gly Arg
1                   5                   10                  15

Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
                20                  25                  30

Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
            35                  40                  45

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
        50                  55                  60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65                  70                  75                  80

Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
                85                  90                  95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
            100                 105                 110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
        115                 120                 125

Asn Pro Ala Tyr
        130

<210> 11
<211> 185
<212> PRT
<213> Hepatitis B virus

<400> 11

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1                   5                   10                  15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
            20                  25                  30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
        35                  40                  45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
    50                  55                  60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65                  70                  75                  80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
                85                  90                  95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
            100                 105                 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro

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                     130                          135                        140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145                     150                 155                     160

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
                    165                 170                     175

Arg Ser Gln Ser Arg Glu Ser Gln Cys
                180                 185
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<210>   12
<211>   212
<212>   PRT
<213>   Hepatitis B virus

<400>   12

Met Gln Leu Phe His Leu Cys Leu Ile Ile Ser Cys Ser Cys Pro Thr
1                   5                   10                  15

Val Gln Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile
                20                  25                  30

Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu Ser Phe Leu
            35                  40                  45

Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp Thr Ala Ser
        50                  55                  60

Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys Ser Pro His
65                  70                  75                  80

His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp Leu Met Asn
                85                  90                  95

Leu Ala Thr Trp Val Gly Gly Asn Leu Glu Asp Pro Val Ser Arg Asp
            100                 105                 110

Leu Val Val Gly Tyr Val Asn Thr Thr Val Gly Leu Lys Phe Arg Gln
        115                 120                 125

Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu Thr Val
    130                 135                 140

Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala
145                 150                 155                 160

Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu Thr Thr
                165                 170                 175

Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro
            180                 185                 190

Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln Ser Arg
            195                 200                 205

Glu Ser Gln Cys
    210
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<210>  13
<211>  188
<212>  PRT
<213>  Hepatitis B virus

<400>  13

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
1               5                   10                  15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
            20                  25                  30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
        35                  40                  45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
    50                  55                  60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
65                  70                  75                  80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
                85                  90                  95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
            100                 105                 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
145                 150                 155                 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro
            165                 170                 175

Arg Arg Arg Arg Ser Gln Ser Pro Ser Thr Asn Cys
            180                 185


<210>  14
<211>  185
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Hepatitis B virus variant

<400>  14

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1               5                   10                  15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
            20                  25                  30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
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                                     10
        35                  40                45
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Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
    50                  55                60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65                  70                75                80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
                85                90                95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
            100                105                110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
            115                120                125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                135                140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145                150                155                160

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
            165                170                175

Arg Ser Gln Ser Arg Glu Ser Gln Cys
            180                185

<210>  15
<211>  152
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  HBcAg variant

<400>  15

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1                5                10                15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
            20                25                30

Thr Ala Ala Ala Leu Tyr Arg Asp Ala Leu Glu Ser Pro Glu His Cys
            35                40                45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp
    50                  55                60

Leu Met Thr Leu Ala Thr Trp Val Gly Thr Asn Leu Glu Asp Gly Gly
65                  70                75                80

Lys Gly Gly Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Val
            85                90                95

Gly Leu Lys Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr
            100                105                110

</div>

Phe Gly Arg Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp
        115                 120                 125

Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser
    130                 135                 140

Thr Leu Pro Glu Thr Thr Val Val
145                 150


<210>  16
<211>  3635
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Plasmid, pAP283-58, encoding RNA phage AP205 coat protein

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ggaaaatcac atggcaaata agccaatgca accgatcaca tctacagcaa ataaaattgt      180

gtggtcggat ccaactcgtt tatcaactac attttcagca agtctgttac gccaacgtgt      240

taaagttggt atagccgaac tgaataatgt ttcaggtcaa tatgtatctg tttataagcg      300

tcctgcacct aaaccggaag gttgtgcaga tgcctgtgtc attatgccga atgaaaacca      360

atccattcgc acagtgattt cagggtcagc cgaaaacttg gctaccttaa aagcagaatg      420

ggaaactcac aaacgtaacg ttgacacact cttcgcgagc ggcaacgccg gtttgggttt      480

ccttgaccct actgcggcta tcgtatcgtc tgatactact gcttaagctt gtattctata      540

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taacgccgtt ccgcaccccg gaaatggtca ccgaaccaat cagcagggtc atcgctagcc      780

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ccgtcatcac cgaaacgcgc gaggcagctt gaagacgaaa gggcctcgtg atacgcctat      1320

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gaaatgtgcg cggaacccct atttgtttat ttttctaaat acattcaaat atgtatccgc      1440

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12

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actcaccagt cacagaaaag catcttacgg atggcatgac agtaagagaa ttatgcagtg   1860

ctgccataac catgagtgat aacactgcgg ccaacttact tctgacaacg atcggaggac   1920

cgaaggagct aaccgctttt ttgcacaaca tgggggatca tgtaactcgc cttgatcgtt   1980

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ttcattttta atttaaaagg atctaggtga agatcctttt tgataatctc atgaccaaaa   2460

tcccttaacg tgagttttcg ttccactgag cgtcagaccc cgtagaaaag atcaaaggat   2520

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<210>   17
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<212>   DNA
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<223>   vector pQb185
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<400> 17
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<210> 18
<211> 131
<212> PRT
<213> Bacteriophage AP205

<400> 18

Met Ala Asn Lys Pro Met Gln Pro Ile Thr Ser Thr Ala Asn Lys Ile
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Val Trp Ser Asp Pro Thr Arg Leu Ser Thr Thr Phe Ser Ala Ser Leu
                20                  25                  30


Leu Arg Gln Arg Val Lys Val Gly Ile Ala Glu Leu Asn Asn Val Ser
        35                  40                  45


Gly Gln Tyr Val Ser Val Tyr Lys Arg Pro Ala Pro Lys Pro Glu Gly
        50                  55                  60


Cys Ala Asp Ala Cys Val Ile Met Pro Asn Glu Asn Gln Ser Ile Arg
65                  70                  75                  80


Thr Val Ile Ser Gly Ser Ala Glu Asn Leu Ala Thr Leu Lys Ala Glu
                85                  90                  95


Trp Glu Thr His Lys Arg Asn Val Asp Thr Leu Phe Ala Ser Gly Asn
                100                 105                 110


Ala Gly Leu Gly Phe Leu Asp Pro Thr Ala Ala Ile Val Ser Ser Asp
        115                 120                 125


Thr Thr Ala
        130


<210> 19
<211> 131
<212> PRT
<213> Bacteriophage AP205

<400> 19

Met Ala Asn Lys Thr Met Gln Pro Ile Thr Ser Thr Ala Asn Lys Ile
1               5                  10                  15


Val Trp Ser Asp Pro Thr Arg Leu Ser Thr Thr Phe Ser Ala Ser Leu
                20                  25                  30


Leu Arg Gln Arg Val Lys Val Gly Ile Ala Glu Leu Asn Asn Val Ser
        35                  40                  45


Gly Gln Tyr Val Ser Val Tyr Lys Arg Pro Ala Pro Lys Pro Glu Gly
        50                  55                  60


Cys Ala Asp Ala Cys Val Ile Met Pro Asn Glu Asn Gln Ser Ile Arg
65                  70                  75                  80


Thr Val Ile Ser Gly Ser Ala Glu Asn Leu Ala Thr Leu Lys Ala Glu

```
               85                        90   14     95

Trp Glu Thr His Lys Arg Asn Val Asp Thr Leu Phe Ala Ser Gly Asn
            100                     105            110


Ala Gly Leu Gly Phe Leu Asp Pro Thr Ala Ala Ile Val Ser Ser Asp
        115                 120             125


Thr Thr Ala
    130


<210>  20
<211>  3613
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Plasmid, pAP281-32, encoding RNA phage AP205 coat protein

<400>  20
cgagctcgcc cctggcttat cgaaattaat acgactcact atagggagac cggaattcga    60

gctcgcccgg ggatcctcta gattaaccca acgcgtagga gtcaggccat ggcaaataag   120

acaatgcaac cgatcacatc tacagcaaat aaaattgtgt ggtcggatcc aactcgttta   180

tcaactacat tttcagcaag tctgttacgc caacgtgtta aagttggtat agccgaactg   240

aataatgttt caggtcaata tgtatctgtt tataagcgtc ctgcacctaa accggaaggt   300

tgtgcagatg cctgtgtcat tatgccgaat gaaaaccaat ccattcgcac agtgatttca   360

gggtcagccg aaaacttggc taccttaaaa gcagaatggg aaactcacaa acgtaacgtt   420

gacacactct cgcgagcgg caacgccggt ttgggtttcc ttgaccctac tgcggctatc   480

gtatcgtctg atactactgc ttaagcttgt attctatagt gtcacctaaa tcgtatgtgt   540

atgatacata aggttatgta ttaattgtag ccgcgttcta acgacaatat gtacaagcct   600

aattgtgtag catctggctt actgaagcag accctatcat ctctctcgta aactgccgtc   660

agagtcggtt tggttggacg aaccttctga gtttctggta acgccgttcc gcaccccgga   720

aatggtcacc gaaccaatca gcagggtcat cgctagccag atcctctacg ccggacgcat   780

cgtggccggc atcaccggcg ccacaggtgc ggttgctggc gcctatatcg ccgacatcac   840

cgatggggaa gatcgggctc gccacttcgg gctcatgagc gcttgtttcg gcgtgggtat   900

ggtggcaggc cccgtggccg ggggactgtt gggcgccatc tccttgcatg caccattcct   960

tgcggcggcg gtgctcaacg gcctcaacct actactgggc tgcttcctaa tgcaggagtc  1020

gcataaggga gagcgtcgat atggtgcact ctcagtacaa tctgctctga tgccgcatag  1080

ttaagccaac tccgctatcg ctacgtgact gggtcatggc tgcgccccga cacccgccaa  1140

cacccgctga cgcgccctga cgggcttgtc tgctcccggc atccgcttac agacaagctg  1200

tgaccgtctc cgggagctgc atgtgtcaga ggttttcacc gtcatcaccg aaacgcgcga  1260

ggcagcttga agacgaaagg gcctcgtgat acgcctattt ttataggtta atgtcatgat  1320

aataatggtt tcttagacgt caggtggcac ttttcgggga atgtgcgcg gaaccccat   1380

ttgtttattt ttctaaatac attcaaatat gtatccgctc atgagacaat aaccctgata  1440

aatgcttcaa taatattgaa aaaggaagag tatgagtatt caacatttcc gtgtcgccct  1500

tattcccttt tttgcggcat tttgccttcc tgtttttgct cacccagaaa cgctggtgaa  1560
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15

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agtaaaagat gctgaagatc agttgggtgc acgagtgggt tacatcgaac tggatctcaa    1620

cagcggtaag atccttgaga gttttcgccc cgaagaacgt tttccaatga tgagcacttt    1680

taaagttctg ctatgtggcg cggtattatc ccgtattgac gccgggcaag agcaactcgg    1740

tcgccgcata cactattctc agaatgactt ggttgagtac tcaccagtca cagaaaagca    1800

tcttacggat ggcatgacag taagagaatt atgcagtgct gccataacca tgagtgataa    1860

cactgcggcc aacttacttc tgacaacgat cggaggaccg aaggagctaa ccgctttttt    1920

gcacaacatg ggggatcatg taactcgcct tgatcgttgg gaaccggagc tgaatgaagc    1980

cataccaaac gacgagcgtg acaccacgat gcctgtagca atggcaacaa cgttgcgcaa    2040

actattaact ggcgaactac ttactctagc ttcccggcaa caattaatag actggatgga    2100

ggcggataaa gttgcaggac cacttctgcg ctcggccctt ccggctggct ggtttattgc    2160

tgataaatct ggagccggtg agcgtgggtc tcgcggtatc attgcagcac tggggccaga    2220

tggtaagccc tcccgtatcg tagttatcta cacgacgggg agtcaggcaa ctatggatga    2280

acgaaataga cagatcgctg agataggtgc ctcactgatt aagcattggt aactgtcaga    2340

ccaagtttac tcatatatac tttagattga tttaaaactt catttttaat ttaaaaggat    2400

ctaggtgaag atcctttttg ataatctcat gaccaaaatc ccttaacgtg agttttcgtt    2460

ccactgagcg tcagaccccg tagaaaagat caaaggatct tcttgagatc cttttttttct   2520

gcgcgtaatc tgctgcttgc aaacaaaaaa accaccgcta ccagcggtgg tttgtttgcc    2580

ggatcaagag ctaccaactc tttttccgaa ggtaactggc ttcagcagag cgcagatacc    2640

aaatactgtc cttctagtgt agccgtagtt aggccaccac ttcaagaact ctgtagcacc    2700

gcctacatac ctcgctctgc taatcctgtt accagtggct gctgccagtg gcgataagtc    2760

gtgtcttacc gggttggact caagacgata gttaccggat aaggcgcagc ggtcgggctg    2820

aacggggggt tcgtgcacac agcccagctt ggagcgaacg acctacaccg aactgagata    2880

cctacagcgc gagcattgag aaagcgccac gcttcccgaa gggagaaagg cggacaggta    2940

tccggtaagc ggcagggtcg aacaggaga gcgcacgagg gagcttccag ggggaaacgc      3000

ctggtatctt tatagtcctg tcgggtttcg ccacctctga cttgagcgtc gattttgtg     3060

atgctcgtca ggggggcgga gcctatggaa aaacgccagc aacgcggcct ttttacggtt    3120

cctggccttt tgctggcctt ttgctcacat gttctttcct gcgttatccc ctgattctgt    3180

ggataaccgt attaccgcct ttgagtgagc tgataccgct cgccgcagcc gaacgaccga    3240

gcgcagcgag tcagtgagcg aggaagcgga agagcgccca atacgcaaac cgcctctccc    3300

cgcgcgttgg ccgattcatt aatgcagctg tggtgtcatg gtcggtgatc gccagggtgc    3360

cgacgcgcat ctcgactgca tggtgcacca atgcttctgg cgtcaggcag ccatcggaag    3420

ctgtggtatg gccgtgcagg tcgtaaatca ctgcataatt cgtgtcgctc aaggcgcact    3480

cccgttctgg ataatgtttt ttgcgccgac atcataacgg ttctggcaaa tattctgaaa    3540

tgagctgttg acaattaatc atcgaactag ttaactagta cgcaagttca cgtaaaaagg    3600

gtatcgcgga att                                                       3613
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<210> 21
<211> 9
<212> PRT
<213> Artificial Sequence
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<220>
<223>  N terminal glycine serine linkers


<220>
<221>  REPEAT
<222>  (1)..(1)
<223>  Glycine can be repeated from zero to five times

<220>
<221>  REPEAT
<222>  (3)..(3)
<223>  Glycine can be repeated from zero to ten times

<220>
<221>  REPEAT
<222>  (4)..(4)
<223>  Serine can be repeated from zero to two times

<220>
<221>  REPEAT
<222>  (5)..(9)
<223>  These residues can be repeated from zero to three times as a
       group

<400>  21

Gly Cys Gly Ser Gly Gly Gly Gly Ser
1               5


<210>  22
<211>  10
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  C terminal glycine serine linkers


<220>
<221>  REPEAT
<222>  (1)..(1)
<223>  Glycine can be repeated from zero to ten times

<220>
<221>  REPEAT
<222>  (2)..(2)
<223>  Serine can be repeated from zero to two times

<220>
<221>  REPEAT
<222>  (3)..(7)
<223>  These residues can be repeated from zero to three times as a
       group

<220>
<221>  REPEAT
<222>  (8)..(8)
<223>  Glycine can be repeated from zero to eight times

<220>
<221>  REPEAT
<222>  (10)..(10)
<223>  Glycine can be repeated from zero to five times

<400>  22

Gly Ser Gly Gly Gly Gly Ser Gly Cys Gly
1               5                   10


<210>  23
<211>  5
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Glycine serine linker

<400>  23

Gly Gly Gly Gly Ser
1               5


<210>  24
<211>  10
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  N-terminal gamma1

<400>  24

Cys Gly Asp Lys Thr His Thr Ser Pro Pro
1               5                   10


<210>  25
<211>  10
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  C terminal gamma 1

<400>  25

Asp Lys Thr His Thr Ser Pro Pro Cys Gly
1               5                   10


<210>  26
<211>  17
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  N terminal gamma 3

<400>  26

Cys Gly Gly Pro Lys Pro Ser Thr Pro Pro Gly Ser Ser Gly Gly Ala
1               5                   10                  15

Pro


<210>  27
<211>  18
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  C terminal gamma 3

<400>  27

Pro Lys Pro Ser Thr Pro Pro Gly Ser Ser Gly Gly Ala Pro Gly Gly
1               5                   10                  15

Cys Gly


<210>  28
<211>  6

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<212>  PRT
<213>  Artificial Sequence

<220>
<223>  N terminal glycine linker

<400>  28

Gly Cys Gly Gly Gly Gly
1               5


<210>  29
<211>  6
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  C terminal glycine linker

<400>  29

Gly Gly Gly Gly Cys Gly
1               5


<210>  30
<211>  6
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  C terminal glycine-lysine linker

<400>  30

Gly Gly Lys Lys Gly Cys
1               5


<210>  31
<211>  6
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  N terminal glycine lysine linker

<400>  31

Cys Gly Lys Lys Gly Gly
1               5


<210>  32
<211>  4
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  C terminal linker

<400>  32

Gly Gly Cys Gly
1


<210>  33
<211>  31
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  oligonucleotide primer
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<400> 33
ccggaattca tggacattga cccttataaa g                                               31


<210> 34
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 34
cctagagcca cctttgccac catcttctaa attagtaccc acccaggtag c                         51


<210> 35
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 35
gaagatggtg gcaaaggtgg ctctagggac ctagtagtca gttatgtc                             48


<210> 36
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer

<400> 36
cgcgtcccaa gcttctaaca ttgagattcc cgagattg                                        38


<210> 37
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> epitope CepsilonH3

<400> 37

Val Asn Leu Thr Trp Ser Arg Ala Ser Gly
1               5                   10


<210> 38
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide primer


<220>
<221> CDS
<222> (1)..(51)

<400> 38
gtt aac ttg acc tgg tct cgt gct tct ggt gca tcc agg gat cta gta        48
Val Asn Leu Thr Trp Ser Arg Ala Ser Gly Ala Ser Arg Asp Leu Val
1               5                   10                  15
                                                                       51
gtc
Val

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<210>    39
<211>    17
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    oligonucleotide primer

<400>    39

Val Asn Leu Thr Trp Ser Arg Ala Ser Gly Ala Ser Arg Asp Leu Val
1                 5                 10                15


Val


<210>    40
<211>    51
<212>    DNA
<213>    Artificial Sequence

<220>
<223>    oligonucleotide primer


<220>
<221>    CDS
<222>    (31)..(51)

<400>    40
accagaagca cgagaccagg tcaagttaac atc ttc caa att att acc cac        51
                                  Ile Phe Gln Ile Ile Thr His
                                  1               5


<210>    41
<211>    7
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    oligonucleotide primer

<400>    41

Ile Phe Gln Ile Ile Thr His
1               5


<210>    42
<211>    9
<212>    PRT
<213>    Homo sapiens

<400>    42

Lys Thr Trp Gly Gln Tyr Trp Gln Val
1               5


<210>    43
<211>    9
<212>    PRT
<213>    Homo sapiens

<400>    43

Ile Thr Asp Gln Val Pro Phe Ser Val
1               5


<210>    44
<211>    9
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<212> PRT
<213> Homo sapiens

<400> 44

Tyr Leu Glu Pro Gly Pro Val Thr Ala
1                   5


<210> 45
<211> 10
<212> PRT
<213> Homo sapiens

<400> 45

Leu Leu Asp Gly Thr Ala Thr Leu Arg Leu
1               5                   10


<210> 46
<211> 10
<212> PRT
<213> Homo sapiens

<400> 46

Val Leu Tyr Arg Tyr Gly Ser Phe Ser Val
1               5                   10


<210> 47
<211> 9
<212> PRT
<213> Homo sapiens

<400> 47

Ala Ala Gly Ile Gly Ile Leu Thr Val
1               5


<210> 48
<211> 9
<212> PRT
<213> Homo sapiens

<400> 48

Ile Leu Thr Val Ile Leu Gly Val Leu
1               5


<210> 49
<211> 9
<212> PRT
<213> Homo sapiens

<400> 49

Met Leu Leu Ala Val Leu Tyr Cys Leu
1               5


<210> 50
<211> 9
<212> PRT
<213> Homo sapiens

<400> 50

Tyr Met Asp Gly Thr Met Ser Gln Val
1               5


<210> 51

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<211>  9
<212>  PRT
<213>  Homo sapiens

<400>  51

Val Leu Pro Asp Val Phe Ile Arg Cys
1                5


<210>  52
<211>  9
<212>  PRT
<213>  Homo sapiens

<400>  52

Phe Leu Trp Gly Pro Arg Ala Leu Val
1                5


<210>  53
<211>  9
<212>  PRT
<213>  Homo sapiens

<400>  53

Tyr Leu Ser Gly Ala Asn Leu Asn Leu
1                5


<210>  54
<211>  9
<212>  PRT
<213>  Homo sapiens

<400>  54

Arg Met Pro Glu Ala Ala Pro Pro Val
1                5


<210>  55
<211>  9
<212>  PRT
<213>  Homo sapiens

<400>  55

Ser Thr Pro Pro Pro Gly Thr Arg Val
1                5


<210>  56
<211>  9
<212>  PRT
<213>  Homo sapiens

<400>  56

Leu Leu Gly Arg Asn Ser Phe Glu Val
1                5


<210>  57
<211>  9
<212>  PRT
<213>  Homo sapiens

<400>  57

Lys Ile Phe Gly Ser Leu Ala Phe Leu
1                5
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<210>  58
<211>  9
<212>  PRT
<213>  Homo sapiens

<400>  58

Ile Ile Ser Ala Val Val Gly Ile Leu
1               5


<210>  59
<211>  8
<212>  PRT
<213>  Homo sapiens

<400>  59

Thr Leu Gly Ile Val Cys Pro Ile
1               5


<210>  60
<211>  5
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  HBCAg peptide

<400>  60

Gly Gly Lys Gly Gly
1               5


<210>  61
<211>  185
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  HBCAg variant

<400>  61

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1               5                   10                  15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
                20                  25                  30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Ser
            35                  40                  45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
        50                  55                  60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65                  70                  75                  80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
                85                  90                  95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Ser Leu Thr Phe Gly Arg
                100                 105                 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
            115                 120                 125
```

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                135                140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145                150                155                160

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
                165                170                175

Arg Ser Gln Ser Arg Glu Ser Gln Cys
                180                185


<210>    62
<211>    152
<212>    PRT
<213>    Artificial Sequence

<220>
<223>    HBCAg

<400>    62

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1                5                10                15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
                20                25                30

Thr Ala Ala Ala Leu Tyr Arg Asp Ala Leu Glu Ser Pro Glu His Ser
            35                40                45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp
    50                55                60

Leu Met Thr Leu Ala Thr Trp Val Gly Thr Asn Leu Glu Asp Gly Gly
65                70                75                80

Lys Gly Gly Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Val
                85                90                95

Gly Leu Lys Phe Arg Gln Leu Leu Trp Phe His Ile Ser Ser Leu Thr
                100                105                110

Phe Gly Arg Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp
            115                120                125

Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser
    130                135                140

Thr Leu Pro Glu Thr Thr Val Val
145                150


<210>    63
<211>    20
<212>    DNA
<213>    Artificial Sequence

<220>
<223>    HB1 primer

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<220>
<221>  misc_feature
<222>  (3)..(3)
<223>  k is g or t

<220>
<221>  misc_feature
<222>  (6)..(6)
<223>  r is a or g

<220>
<221>  misc_feature
<222>  (7)..(7)
<223>  m is a or c

<400>  63
gakgtrmagc ttcaggagtc                                              20


<210>  64
<211>  20
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  HB2 primer


<220>
<221>  misc_feature
<222>  (6)..(6)
<223>  b is g or c or t

<220>
<221>  misc_feature
<222>  (12)..(12)
<223>  b is g or c or t

<400>  64
gaggtbcagc tbcagcagtc                                              20


<210>  65
<211>  20
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  HB3 primer


<220>
<221>  misc_feature
<222>  (16)..(16)
<223>  s is c or g

<220>
<221>  misc_feature
<222>  (18)..(18)
<223>  s is c or g

<400>  65
caggtgcagc tgaagsastc                                              20


<210>  66
<211>  20
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  HB4 primer


<220>
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26

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<221>  misc_feature
<222>  (9)..(9)
<223>  r is a or g

<220>
<221>  misc_feature
<222>  (18)..(18)
<223>  r is a or g

<400>  66
gaggtccarc tgcaacartc                                                         20


<210>  67
<211>  20
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  HB5 primer


<220>
<221>  misc_feature
<222>  (6)..(6)
<223>  y is c or t

<220>
<221>  misc_feature
<222>  (12)..(12)
<223>  b is g or c or t

<220>
<221>  misc_feature
<222>  (18)..(18)
<223>  r is a or g

<400>  67
caggtycagc tbcagcartc                                                         20


<210>  68
<211>  20
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  HB6 primer


<220>
<221>  misc_feature
<222>  (6)..(6)
<223>  y is c or t

<220>
<221>  misc_feature
<222>  (9)..(9)
<223>  r is a or g

<400>  68
caggtycarc tgcagcagtc                                                         20


<210>  69
<211>  20
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  HB7 primer

<400>  69
caggtccacg tgaagcagtc                                                         20
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27

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<210>   70
<211>   20
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   HB8 primer


<220>
<221>   misc_feature
<222>   (9)..(10)
<223>   s is c or g

<400>   70
gaggtgaass tggtggaatc                                                    20


<210>   71
<211>   20
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   HB9 primer


<220>
<221>   misc_feature
<222>   (3)..(3)
<223>   v is a, c or g

<220>
<221>   misc_feature
<222>   (8)..(8)
<223>   w is a or t

<220>
<221>   misc_feature
<222>   (10)..(10)
<223>   y is c or t

<400>   71
gavgtgawgy tggtggagtc                                                    20


<210>   72
<211>   20
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   HB10 primer


<220>
<221>   misc_feature
<222>   (10)..(10)
<223>   s is c or g

<220>
<221>   misc_feature
<222>   (11)..(11)
<223>   k is g or t

<400>   72
gaggtgcags kggtggagtc                                                    20


<210>   73
<211>   20
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   HB11 primer
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28

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<220>
<221>  misc_feature
<222>  (3)..(3)
<223>  k is g or t

<220>
<221>  misc_feature
<222>  (9)..(9)
<223>  m is a or c

<400>  73
gakgtgcamc tggtggagtc                                          20


<210>  74
<211>  20
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  HB12 primer


<220>
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<400>  74
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<210>  75
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<210>  77
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<210>  82
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<210>  83
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<220>
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<210>  84
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<210>  85
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